

DOCUMENT RESUME

ED 385 538

SP 036 163

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TITLE A Literature Review Investigating the Relationship
between Sports Participation and Psychological
Well-Being.
PUB DATE May 95
NOTE 52p.; Doctoral Research Paper, Biola University.
PUB TYPE Dissertations/Theses - Undetermined (040) --
Information Analyses (070)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Athletes; *Athletics; Higher Education; Literature
Reviews; *Mental Health; Physical Education;
*Physical Fitness; Research Methodology; *Research
Problems; Sport Psychology; *Well Being

ABSTRACT

This study investigated the connection between sport, emotion, and psychological health through an examination of the literature on sports participation and psychological health. The review found that while some of the research supports a relationship between psychological well-being and sports participation, some of it is inconclusive. Many methodological issues are present in the literature on both sports participation and exercise. The mixed findings can partially be attributed to poorly established methodology. For instance, the general failure of researchers to adequately define psychological well-being was a major roadblock. Similarly, excessive reliance on survey and questionnaire studies yielded results that were predictable and limited. In the final analysis, four of the seven exercise studies that were examined pointed to a relationship between exercise and well-being. Five of 11 sports participation studies reviewed also showed evidence for a connection. Possible explanations for the mixed findings include poorly defined terms, use of improper measurement tools, and inadequately designed studies. (Contains 42 references.) (JB)
(Author/JB)

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**A LITERATURE REVIEW INVESTIGATING THE RELATIONSHIP
BETWEEN SPORTS PARTICIPATION AND
PSYCHOLOGICAL WELL-BEING**

A Doctoral Research Paper

Presented to

the Faculty of the Rosemead School of Psychology

Biola University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Psychology

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May, 1995

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TABLE OF CONTENTS

	PAGE
DOCTORAL RESEARCH PAPER	
Introduction	1
Methodological Considerations	3
Operational Definitions	4
Research Variations	7
Review of the Literature on Exercise and Psychological Well-being	9
Review of the Empirical Research	17
Foundational Studies	18
Studies Having Psychological Well-being as the Dependent Variable	27
Studies Predominantly Concerned with Sports Participation	32
Implications for Further Research	38
Summary and Conclusions	41
REFERENCES	44

A LITERATURE REVIEW INVESTIGATING THE RELATIONSHIP
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Introduction

Sports and competition have a long and illustrious history, having been a pursuit of human beings since the earliest civilizations. The Greek and Roman emphasis on sport is well documented. From the first Olympic Games to present day competitions, culture has elevated the status of sports in many countries around the world. Still, the reasons for such behavior have never been completely understood. A plethora of different types of competition exists; similarly, hypothetical explanations for sport motivation are fairly prevalent. Though each individual has unique reasons for participating, there may be some widespread benefits of sports involvement and some legitimate ways to measure our desire for the challenges of sport. Spinrad (1981) suggested that "sports represent a respite from the complexity of personal and social life" (p. 363). Whether the function of sport is relief from the stresses of life, socialization with others, or some other motive, at first glance there seems to be a strong psychological component.

Even though sports have been around for ages, the research on psychological motives for participation is rather limited. Such longevity speaks to the presence of

rewards, be they internal or external, for participants. A case could be made for the role of external rewards such as fame and fortune in broadening the sports emphasis. On the other hand there seem to be personal variables that motivate individuals to continue playing their particular sport. Some people may feel empty when the weekly game is canceled or when the season comes to an end. For the child growing up, sports may represent a chance to succeed, to gain some approval, or to express oneself in a different way. Each person has his or her own internal motivations for sports involvement, but one wonders if some of these motivations are universal.

Our culture has taken a much greater interest in exploring the motivations and benefits of exercise than of sports. A substantial amount of overlap exists not only in the definitions of the terms, but also in the way that they were researched. Much of the research on exercise benefits has been helpful to the investigation of sports participation. In this literature review, the research on exercise and psychological well-being was examined. This provided a foundation for further investigation of the empirical research specifically concerned with the interaction of sports participation and psychological well-being.

Obviously, there are many motives that effect desire to participate in sports. This review was not comprehensive in its attempt to discover all of the possible motives, but instead attempted to determine if the desire to be psychologically healthy was one of them. Most people would probably agree that dealing with emotions is a large part of psychological well-being. One author suggested that sports can make a significant impact on our health.

I believe that sports are not merely entertainment, but are rooted in necessities and aspirations of the human spirit. They provide an ennobling quality, a joy, that can lift us out of our own lives and put us in touch with the highest standards of excellence. . . . Sports help the athlete and spectator alike to keep the streams of the spirit running clean and strong (Novak, 1982, p. 21).

Investigating the connection between sports, emotion, and psychological health was the purpose of this paper. Following an examination of the methodology, the literature on sports participation and psychological health was thoroughly reviewed. Although many of the studies explored were multidimensional in nature, in most cases, only the information that was pertinent to this review was presented.

Methodological Considerations

There are several important factors to recognize before undergoing an investigation of the literature. Research in this area tends to come under one of three categories. There are studies concerned with how sports participation affects psychological well-being, studies directed at promoting psychological well-being, and studies focused primarily on motivations for sports participation. Within those three approaches, a great deal of variety exists. Diversity of approach can be beneficial in many circumstances, promoting creativity and often leading to unexpected findings. On the other hand it can foster too much independence and lead to a lack of direction. Research on sports participation and psychological well-being shows very little consistency in either the way researchers defined the terms or the way they went about discovering relationships.

Operational Definitions

One area of negligible diversity involves the definitions of exercise and sport participation. The picture is complicated in that while most forms of sport include exercise, there are many forms of exercise that do not involve sport. Many of the studies included in this review did not attempt to differentiate between sport and exercise, although a clear definition of terms seems necessary. Brown (1986) provided a definition suitable for this purpose. He defined exercise as "physical activity that leads to the maintenance or improvement of a person's level of physical fitness" (p. 71). Sport meanwhile was defined as "activity that is required of the athlete who has to endure an intense training regimen to prepare for competitive events" (p. 71). These definitions will be called upon as needed to examine the degree of athletic involvement of subjects in particular studies.

While agreement on the definitions of exercise and sports participation is viable, the interpretation of the meaning of psychological well-being is subject to much debate. Psychological well-being is an abstract and complex construct that is difficult to quantify. Attempts to do so have ranged from brief three-item questionnaires, to more lengthy questionnaires, to formal psychological assessment, and finally to psychological batteries. There is no consensus of opinions on the best method for measuring psychological well-being within the sport psychology literature. This presents a rather formidable dilemma both for this literature review as well as for future research on the topic. An accepted and standardized definition of the construct of psychological well-being is needed. Until some agreement is reached, researchers are bound to continue

using their own subjective meanings or opting for whatever terminology fits their needs.

Methods of assessing psychological well-being will be examined in detail for each study, but a general overview may also be helpful. The simplest way in which researchers measured psychological well-being was to equate it with either life satisfaction, avowed happiness, or both. Such a definition does not appear to capture the complex meaning of the term. Someone who is psychologically healthy would certainly be expected to express some satisfaction with their life. Likewise most would probably report that they were reasonably happy, if the question was asked generally as opposed to focusing on a specific time. However, a psychologically healthy individual is not necessarily satisfied or happy with their life. In the same manner, a dissatisfied or unhappy person could easily be psychologically healthy. Although use of the terms "life satisfaction" and "avowed happiness" may simplify measurement, those words do not adequately capture the entire meaning of psychological well-being.

Partially in response to these shortfalls, other researchers have gone in different directions. Some have attempted to measure psychological well-being with short questionnaires or problem checklists. They have created their own scale or borrowed from one previously used in other research. A large diversity exists in terms of the amount of caution used in establishing reliability and validity for these informal instruments. While some have employed strict criteria, others seemingly pick and choose without consideration for inferential statistics. The most common technique was to use short questionnaires intended to measure depression, self-esteem, anxiety, or some other aspect of health. Research of this variety reduces psychological well-being

to the absence of depression or the presence of self-esteem, and for that reason can also be problematic. While it may be true once again that those smaller constructs are ingredients of psychological well-being, they also fail to capture the complexity of the concept.

A more proven and complete way to measure psychological well-being is through formal psychological assessment. Using instruments that have been standardized and are generally accepted is the best way to guard against faulty measurement. Yet even with this method there are issues to consider. It is much more expensive, for instance, to give one thousand subjects a Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway & McKinley, 1983), than it is to have them answer five questions related to depression. Even when the financial resources exist for formal testing, the question arises as to what personality profile is considered healthy. With some instruments of psychological testing, a very small percent of the population would fit the classification of psychologically healthy. Therefore it appears that formal testing with either one instrument or a complete battery does not solve all of the problems of measuring psychological well-being.

As expected, most researchers are also aware of the confusion. Kalimo and Vuori (1990) attempted to address that confusion by providing some operational definitions of mental well-being. Using external, normative criteria, well-being was seen to be based on an individual's experiences. According to this definition, self-report was the only way to measure psychological well-being. The use of such a meaning commonly led the researcher to employ dependent variables such as life satisfaction and

happiness. A second common definition of mental well-being included accomplishment of goals or success in life. George and Bearon (1980) appeared to combine these two interpretations when they defined life satisfaction as "an assessment of the overall conditions of existence as derived from a comparison of one's aspirations to one's actual achievements" (p. 38). Yet a third viewpoint offered by Kalimo and Vuori (1990) involved one's level of functioning. Objective measurement was easier under this viewpoint since psychologists could test for functional impairments. Of these three perspectives, self-report of life satisfaction was the preferred method for determining psychological well-being (Kalimo & Vuori, 1990).

It can be speculated that the shortcomings of each definition of psychological well-being have lead researchers to invent their own meanings. The result has been an abundance of methods for measuring psychological health with no one acceptable standard. Perhaps future studies will become more focused as researchers clarify their terms and agree to measure psychological well-being in similar ways. Currently however, simplicity and practicality seem to be the prevailing standards resulting in substantial diversity.

Research Variations

Another important methodological factor involves the type of research performed. The overwhelming majority of studies on exercise and sports participation incorporated survey data. Written questionnaires, Likert scales and psychological tests were the preferred method for gathering data. Since these types of research were conducted, causality was difficult to determine. Instead, identification of relationships

between variables was the strongest legitimate way to present results. Therefore correlational statistics were presented in most of the research that was examined.

A small portion of the research on sports participation was longitudinal in design. Such research is often preferred to giving a single test because baseline data can be obtained and change can be monitored over time. Still, the longitudinal studies were also of the survey variety and carried the same limitations in terms of causal attributions.

Issues related to selection bias had to be carefully examined where survey data was employed. For instance if subjects were volunteers, perhaps there was some variable about them that separated them from the regular population prior to testing. Randomization eliminates this problem in experimental research, but not in survey data when the subjects self-select into groups. Furthermore, researchers should have in some way ensured that their sample represented the geographical area when conducting the survey, which brings up the issue of generalization across cultures. Several of the studies to be reviewed were conducted in foreign countries, yet the age groups and variables were similar to those investigated in United States studies. While it may be interesting to hypothesize on differences between cultures, that is beyond the scope of this review.

A final consideration with survey data is the problem of attrition. Often those who were less motivated did not complete the entire questionnaire or dropped out of the study before completion. Unfortunately, those may also be the individuals who did not participate regularly in sports. In the final results, attrition may have made a significant

impact on the data. Researchers should carefully attempt to prevent attrition and either show that it did not significantly affect results or admit when it did make an impact.

While most of the research on sports participation implemented survey data, a few authors attempted quasi-experiments. Typically their groups were self-selected into some sport or exercise. The problem with these studies was that the two groups may have differed prior to having the independent variable applied. A true experiment where groups were randomly selected and placed in their condition was difficult to locate in the research. It should be acknowledged that finding a sufficient number of subjects willing to participate in a sport for research purposes would have been difficult. Still, there was a shortage of true experiments conducted with sports participation as the independent variable and psychological well-being as the dependent variable. Causal statements alluding to the benefits of sports participation on well-being are thus unavailable. In the following sections, specific methodological problems are highlighted as research is examined in greater detail.

Review of the Literature on Exercise and Psychological Well-being

Before examining the research pertaining to sports participation and psychological well-being, it may be helpful to get an overview on the corresponding exercise literature. Interest in the physical and psychological benefits of exercise has exceeded the interest in the parallel benefits of sports participation. Therefore, the research has progressed further in terms of methodology and precision. For instance, (Bozoian, Rejeski, & McAuley, 1994) said there is reason to believe that regular

exercise and physical activity lead to "both physiological and psychological health benefits" (p. 326). Some of the studies on exercise will serve as a measuring stick for investigation of the sports participation literature. Although the research on exercise and well-being is rather vast, a limited number of key studies will be reviewed.

Perhaps the appropriate starting point would be with two researchers who conducted their own literature review of pre-experimental, quasi-experimental, and experimental research on how exercise effects personality (Doan & Scherman, 1987). They were interested in the status of the research, but also in speculating on how exercise can be prescribed therapeutically. For example they stated, "exercise potentially represents a means by which a single intervention can affect both the physical and mental health of the client" (p. 28). Their method was to perform a computer search of all articles from 1977 to 1987 on this subject. Next they evaluated studies on variables such as focus, subjects, controls, psychological instrument, cardiovascular fitness improvement, and outcome on psychological tests. Generally, their evaluation of the research methodology was not very favorable.

Ordinarily, studies did not attempt to correlate the exercise program with the desired psychological outcome. Since longitudinal studies were rare, there was no information on whether the benefits lasted. Most of the data was gathered through self-reported measurement. Taking pre-experimental and quasi-experimental research together, improvement on psychological variables was found in 77% of studies. That number decreased to 61% for experimental studies. The researchers viewed this as evidence for a general trend toward improved psychological adjustment through

exercise, but not as sufficient proof to draw any conclusions. Recommendations were made for objective (non-self-report) data, consistent psychological assessment tools, representative samples prior to generalization, increased experimental studies, and provision for future replication. As far as therapeutic use of exercise, it was recommended that practitioners carefully select flexible and moderate exercise programs or refer to appropriately trained professionals.

Just as literature reviews can be helpful for comparing studies, individual research can provide valuable specific information. Coleman, Washington, and Price (1985) compared older women engaged in an exercise program to older women not exercising in terms of social background and well-being. Their goal was to investigate and isolate the cause of physical and psychological benefits from exercise. Specifically, they wanted to know if social background or actual involvement was responsible for improvement in sense of well-being.

Subjects were recruited from exercise programs, a retirement complex, and a church. The participant group consisted of 28 women 55 to 81 years-old. For three weeks these women attended water and flexibility sessions. Additionally, they were involved in swimming, walking, or aerobic dance. Meanwhile the 30 women in the nonparticipant group were all leading independent lives, but were not involved in an exercise regimen. A major concern arose in the description of subject recruitment. The authors failed to report whether they had requested volunteers or simply asked people completing exercise to fill out a questionnaire. They also neglected to reveal how or if subjects were placed in groups. The inference was that self-selection had occurred.

Nevertheless, there was some confusion about whether this was a true experiment or an after-the-fact analysis.

Both groups were given two measures of well-being, the Responsibility Scale (Kurtz & Kyle, 1977), and the Internal-External Locus of Control Scale (Rotter, 1966). The researchers failed to specify however, in what way the Responsibility Scale and the Locus of Control Scale related to well-being. Rationale for the selection of these scales was not clearly delineated. Results of analysis of variance showed no significant differences in well-being due to exercise participation. However, they did find differences in well-being when the independent variables were occupation, education, and employment status. Evidence was already being found indicating confusion in terms of temporality issues. Because the subjects were allowed to self-select rather than being randomly placed in groups, it was impossible to determine if the psychologically healthy individuals naturally sought out exercise, or if people exercised and thereby become more healthy.

Another study focused on a younger population. Mechanic and Hansell (1987) expected that competence and psychological well-being would have a significant influence on self-assessed physical health. Their participants were volunteer seventh, ninth, and eleventh grade students from five New Jersey communities. After obtaining parental consent and eliminating cases with incomplete data, 1057 subjects had completed all of the information for the longitudinal study.

Psychological well-being was assessed through a 20-item depression scale (Center for Epidemiological Studies Depression Scale) (Radloff, 1977), and a 10-item

self-esteem scale (Rosenberg, 1979). Both measures were believed to have good reliability and validity. Internal consistency was rated at .84 for the depression measure and .82 for the self-esteem measure. Two items were included to investigate the level of physical exercise. One asked about the frequency of sports team participation and the other dealt with nonteam physical exercise. A rather low correlation of .38 was found between the two items. Seemingly these researchers were comparing sports participation with exercise though they did not intend to do so.

In the results section, the researchers called attention to the possibility of selection bias. Since parental consent had to be ascertained and subjects were volunteers, it was possible that the sample was healthier and happier than the population from which it was drawn. The information of interest to this literature review was that involvement in sports and exercise was associated with fewer physical complaints, lower levels of depression, and higher self-esteem. Higher levels of sports and exercise also correlated positively with achievement and interest in social activities. Although this study did not officially differentiate between sports and exercise, physical activity was found to be related to psychological well-being.

One of the more ambitious studies to date was conducted by Goldwater and Collis (1985). They recognized the shortage of experimental studies with control groups in research on the effects of exercise. Therefore they designed an experiment whereby college students were randomly assigned to either an exercise program or a control condition designed to simulate physical training. Subjects from both groups were then given several tests of psychological well-being including the Taylor Manifest

Anxiety Scale (Taylor, 1953), the Lie Scale (Graham, 1978), and the Welsh Scale (Dahlstrom & Welsh, 1976), both from the MMPI. By using such a design, the researchers believed they could isolate the effects of exercise on psychological well-being. They arranged for the control group to be involved in some type of activity program to account for potential social benefits. Similarly, they designed that activity program to take on the appearance of a regular exercise routine to control for the effects of subjects' expectations of positive results. Most important, they randomly assigned participants to conditions rather than letting them self-select. This decision was made so pre-experiment differences in expectations and motivation would be eliminated as competing explanations.

Unfortunately, complete random assignment could not be achieved due to constraints in the time tables of subjects. Attrition was another significant factor as 13 of the 51 subjects did not complete the program and 6 others were dropped for various reasons. To their credit, researchers mentioned attrition as a possible source of confounding. Because 10 of the 13 subjects who withdrew were from the experimental condition, they hypothesized that high physical demands may have caused unmotivated subjects to quit, thereby altering the configuration of the experimental group. It certainly was a strong possibility that only the highly motivated individuals remained in the experimental group.

Results of analysis of variance showed no significant differences between groups on the three measures of psychological well-being before application of the conditions. Experimental subjects showed more improvement than controls on the

Taylor Manifest Anxiety Scale (Taylor, 1953) and the subjective well-being measure, but the difference was insignificant. Likewise, no significant between-groups differences were found on the Welsh-R scale (Dahlstrom & Welsh, 1976). It was postulated that the negative results were due to the use of measures of personality as opposed to affective measures. They suggested their results showed that improvements in physical fitness led to improved psychological well-being. However, without significant differences between the groups, the foundation for such a conclusion was not clear.

Finally, a recent study on job burnout in the Royal Canadian Mounted Police (Stearns & Moore, 1993) correlated different variables with occupational fatigue. They surveyed several categories of law enforcement employees on variables such as job burnout, attitude about crime, interpersonal trust, happiness, life satisfaction, personality, and health-related concerns. An intriguing approach was taken to the measurement of psychological well-being. They used the Ego-strength, Psychological Control, and K scales of the MMPI (Graham, 1978; Hathaway & McKinley, 1983) to investigate level of psychological adjustment. Researchers expected that burnout would correlate negatively with Ego-strength and K scores. Although this was a logical hypothesis, the authors admitted that it was a relatively unproven method for quantifying psychological well-being.

Nevertheless, researchers administered questionnaires to a random sample of policemen and to all active policewomen. They also sampled noncommissioned officers, instructors at the police academy, and recruits in training. Descriptive

statistics were provided indicating that the response rate and demographics were acceptable. Factor analysis was conducted on the different variables. Next, the researchers presented intercorrelations between predictor and criterion variables. Significant correlations were found between job burnout and all three of the psychological adjustment scales. Exercise frequency correlated negatively with burnout.

Having already shown correlations, the researchers then did a step-wise multiple regression to determine which variables were most strongly related to burnout. Psychological well-being in most cases was the primary factor in job burnout for law enforcement workers. Frequency of exercise also appeared to be an important variable. Calling attention to the limitations of correlational data, the researchers concluded "these data provide additional support for the notion that exercise and involvement in sports or hobbies may serve as buffers against the negative consequences of police work" (Stearns & Moore, 1993, p. 141).

Convincing evidence has been found pointing to a relationship between exercise and psychological well-being. The consensus among mental health researchers points to a positive association between physical health and mental well-being (Morgan, 1985). Yet as we have seen, some of the evidence is not supportive and some of the research was not methodologically sound. Bearing in mind the deficiencies in the exercise research, a review of the research on sports participation is now presented.

Review of the Empirical Research

In comparing exercise and sports participation, it is important to note that each contains a great deal of diversity. Just as there are many kinds of exercise, there is a wide variety of sports. Yet there can also be significant overlap between the two. Most forms of sports participation include physical activity of some sort, and exercise frequently is accomplished through sports. Both can typically be done with or without others, can serve the purpose of challenging oneself, and can lead to physical and mental changes. Logically then it seems as if studies comparing exercise and sports participation on the dependent variable of psychological well-being would elicit similar findings.

The literature on the psychological benefits of exercise appears to be rather inconclusive. Therefore it would probably be expected that research on the psychological benefits of sports would be equally unsettled. One element remains however, that is present in sports participation, but is not vital to exercise. While almost every conceivable type of sports participation contains competition with another person, exercise generally involves comparison with oneself. If a researcher were to attempt to isolate this important variable in an experiment, it would probably be rather challenging. A much simpler method may be to compare the research on exercise and psychological well-being to the research on sports participation and psychological well-being. While an investigation of the direct role of competition will not be attempted here, the remainder of this paper will focus on the sports participation literature as it relates to psychological well-being.

Foundational Studies

Several key studies were critical to the investigation of the relationship between sports participation and well-being. Even though a study by Gauvin (1989) pertained mostly to the effects of regular exercise, it can be considered foundational solely for its methodology. With rare exceptions, few of the researchers reviewed here provided a rational basis for choosing a particular measurement device. Gauvin however, did attempt to define terms and choose instruments based on what they had been shown to measure. He cited Diener (1984) as an authority on both defining and measuring subjective well-being. Diener viewed subjective well-being as comparable to life satisfaction, the presence of positive affect, and the absence of negative affect in one's life. He recommended three instruments for measuring subjective well-being, with convincing rationale being given for the Affectometer (Kamman & Flett, 1983), the Affect Intensity Measure (Larsen, 1985), and the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985).

Gauvin (1989) was disturbed by the prevailing notion that exercise promoted subjective well-being. Therefore, he proceeded to study 122 adults from age 18 to 77. A questionnaire designed to measure life satisfaction and preponderance of positive and negative affect was generated. Subjects were classified as to their level of physical exercise. The four levels of exercisers were then compared and no significant differences were found on life satisfaction or frequency of positive and negative affect. The conclusion drawn was that exercise does not significantly influence subjective well-being.

Subjective well-being seems to involve an individual's personal report of happiness or life satisfaction, whereas psychological well-being is a broader term with more objectivity. Yet many researchers purport to be measuring psychological well-being when asking subjects how satisfied they were with life. Gauvin (1989) provided an excellent prototype on how a researcher should go about defining terms and choosing tests. While the results were not significant, the methodology will be helpful as other studies are scrutinized.

Snyder and Spreitzer (1974) did some pioneering work on sports participation. They noted that although several studies addressing adolescent participation had been completed, there was a shortage of research on adult sports involvement. They proposed to undertake such a study, keeping participation as the independent variable and psychological well-being as the dependent variable. The hypothesis was that sports involvement would promote psychological well-being.

It should be pointed out that these authors were interested in more than sports participation. They measured sports involvement on several dimensions including behavioral, affective, and cognitive interest in sports. On questionnaires, these dimensions took the form of queries about observing sports, reading about sports, and talking about sports. However, this review is directed only at behavioral involvement, or more specifically, active sports participation.

A superficial examination of previous research on sports involvement was presented by the authors before they began to describe their study. Next, they elaborated their method for assessing psychological well-being. Basically, they

followed in the footsteps of previous researchers. Bradburn (1969) and Robinson and Shaver (1969) correlated several variables with psychological well-being. It was not clear how they defined that construct except that it had to do with perceived life satisfaction and avowed happiness.

Snyder and Spreitzer (1974) attempted to account for this lack of clarity by giving rationale for equating psychological well-being with life satisfaction and happiness. They reported that all had been previously associated with increased social interaction and positive affect. Since sports were one form of social participation, they believed that sports involvement would lead to greater life satisfaction and happiness. Furthermore they cited two previously conducted surveys from The National Opinion Research Center (Bradburn, 1969) and the Survey Research Center (Robinson & Shaver, 1969). Both surveys reportedly discovered consistent reliability and validity in self-reports of psychological well-being as simplified measures of life satisfaction.

Research was collected by randomly mailing out questionnaires in Toledo, Ohio. Those who did not respond initially were sent a second questionnaire. Originally, 945 questionnaires were sent; of those, 510 were properly completed and returned (54%). Because data was measured on an ordinal basis, the authors limited their goals to discovery of relationships. The researchers presented a table of contingencies that supposedly portrayed a relationship between sports involvement and psychological well-being. Gamma values were given, but their significance was not clearly delineated. This statistic is generally regarded to be suspect and is frequently used as a last resort when others do not verify findings. Researchers also mentioned a

chi-square test in the text, but their tables did not report results from any such analysis. In general the findings were reported in a confusing and unconvincing fashion.

Overall results suggested a relatively weak relationship between playing sports and measures of well-being (life satisfaction and avowed happiness). This was explained as a product of having limited response alternatives to the questions posed. A "behavioral involvement index" (Snyder & Spreitzer, 1974, p. 32) consisting of playing, watching, conversing, and reading about sports was the best predictor of psychological well-being. Findings on this index were stronger for females than for males. On the variable of sports participation, significance was not found for males on measures of life satisfaction or avowed happiness. Significance was found for females on avowed or declared happiness, but not for life satisfaction. The authors offered the explanation that perhaps since fewer females participated in sports, those who did truly enjoyed the activity and found it beneficial to their lives.

The authors concluded that there were many unanswered questions. Specifically, the question of whether differences in psychological well-being between athletes and nonathletes were due to "self-selection into sports or the socialization consequences of athletic participation" (Snyder & Spreitzer, 1974, p. 36) remained unanswered. As proposed earlier, the issue of temporal sequence has posed problems for researchers. Due to methodological choices, it was impossible for this study to answer the question of whether psychological well-being caused the athlete to pursue his or her interest in sports, or if participation promoted well-being. Perhaps an argument could even be made that the healthier individuals sought out sports and then

became even more psychologically well. Even though the authors were not able to answer this question, they did seem to view sports as beneficial due to their tendency to facilitate social interaction.

Another foundational study (Snyder & Kivlin, 1975) compared female athletes to nonathletes on both well-being and body image. It was hypothesized that women athletes would have lower scores on psychological well-being and body image. The rationale was that social negativism and role conflict would be experienced by female sports participants. A second hypothesis pertaining to the type of sport played was also offered. Because gymnastics was better suited to the stereotyped female role, they suspected that participants would score higher on well-being and body image measures compared to basketball players.

The two dependent variables for this study were psychological well-being and body image. It was unclear exactly how these variables were measured. As far as psychological well-being, the authors adopted their measures from research conducted by Bachman, Kahn, and Davidson (1967). They gave evidence for prior use of this measure, but failed to explain precisely what it was. Apparently it taps into "global feelings of contentment, life satisfaction, and happiness" (Snyder & Kivlin, 1975, p. 193). From the tables, it looks as if they simply asked subjects if they felt "generally good in spirits," were "very satisfied with life," and could "find much happiness in life" (p. 195). Subjects were allowed to answer "most of the time," "much of the time," or "some/seldom" (p. 195). The researchers' explanation of what they meant by psychological well-being lacked clarity. Because they failed to give adequate rationale

for their choice of a measure, not to mention statistical evidence, it also lacked validity.

The subject pool for the nonathletes was women enrolled in sociology classes at a university. The researchers factored out athletes from this group, but elected not to eliminate those who happened to have a "dedicated interest in athletics" (Snyder & Kivlin, 1975, p. 193). Meanwhile the athletes were selected from lists of participants in National Intercollegiate Championships and gymnasts who participated in Olympic tryouts. A 65% response rate among athletes was received from a mailed questionnaire. Researchers included basketball, gymnastics, swimming/diving, and track and field subjects in hopes of obtaining a variety of sport type and degree of social acceptability for women. Although response rates differed according to sport, the researchers were not concerned since equal representation was not required. One consideration they did not mention was that sampling methods differed for athletes and nonathletes. This may have made an impact on results since the less motivated athletes probably did not complete or mail the questionnaire.

The authors then used a chi-square test to examine their data. They found significant differences between athletes and nonathletes on measures of well-being. Athletes obtained higher scores on psychological well-being than nonathletes. The positive effects of sports participation refuted the authors' hypothesis. They attempted to explain their findings by pointing out that the athletes as a group came from a superior socioeconomic background. However, they conceded that this was an insufficient explanation. The conclusion therefore, was that "even though women athletes have frequently received negative sanctions, their participation in sports has

apparently been psychologically satisfying and rewarding" (Snyder & Kivlin, 1975, p. 197). It should be pointed out that the authors were guilty of drawing some unfounded conclusions. For instance, they stated that their findings lent support to the hypothesis that gymnasts should score higher on measures of well-being than other athletes. The results reported in their tables however, were statistically insignificant.

In studying a distinctive population, Valliant, Bezubek, Daley, and Asu (1985) addressed the benefits of sports participation from a unique perspective. These researchers were mainly interested in self-esteem and locus of control among disabled athletes as compared to disabled nonathletes. Disabled individuals are undeniably part of the general population and it seems reasonable to assume that sports participation would affect them similarly. As in many studies, measurement of level of satisfaction and happiness was included.

Researchers located 161 physically disabled individuals at regional or national competitions. These people were asked to complete questionnaires involving personal characteristics and training methods. Disabled nonathletes were found "with the help of local organizations" (Valliant et al., 1985, p. 926). Of the 161 individuals involved in the study, 139 were athletes and 22 were not. The disabled athletes were further classified into wheelchair (61), amputee (33), blind (46), and cerebral palsy (15). Because some individuals fit in more than one category, the sum of group members was greater than the total number of athletes. The researchers utilized the 22 nonathletes as a control group, but there was no manipulation of variables in this study. All of the data was gathered on individuals who were technically already in one group or the other.

The Coopersmith Self-esteem Inventory (Coopersmith, 1967), Rotter's Locus of Control (Rotter, 1966), and social history questionnaires were used to gather data. Included in the questionnaire were items about life satisfaction and happiness. The researchers were not clear though on how those constructs were measured. A chi-square test found significant differences between the two groups on both satisfaction and happiness, with disabled athletes scoring higher on both variables. Problems with this study were noticeable in the discussion section. Here the authors came to the conclusion that since disabled athletes scored higher than nonathletes, athletic activities were beneficial. However, since the study did not test group members prior to their placement in their respective groups, it cannot be determined that athletic involvement was directly responsible. Perhaps the athletes as a group already had higher self-esteem and internal sense of control and that led them to seek out athletics. So even though athletic involvement may have "elevated mood, resulting in greater satisfaction and happiness" (Valliant et al., 1985, p. 928), that conclusion was unwarranted for this study.

Spreitzer and Snyder have published more research on sports involvement than any other authors. In their most recent study (Spreitzer & Snyder, 1989), they focused on adults who were dissatisfied with their lives. They examined the role of sports participation and observation in escaping from life dissatisfaction. Subjects were gathered via random telephone calling in the Toledo, Ohio area and subsequently interviewed. The purpose was "to explore the relationship between several perceived quality of life dimensions and involvement in sports" (p. 4). Those dimensions were

job satisfaction, self-esteem, and overall life satisfaction. The specific question they posed was "do we find a greater degree of involvement in sport when the dimensions of life quality are less evident" (p. 4)?

One primary methodological consideration was the sample garnered through the random phone dialing technique. Even though researchers attempted call-backs, it was possible that the subjects reached were either less satisfied with their lives or less active people. Another point not mentioned by the researchers concerned those who were reached but declined to participate. Perhaps these individuals also had an impact on the final results.

Quality of life dimensions were measured through modifications of various brief questionnaires used previously in other studies. No reason was given for choosing these instruments. Subjects were asked seven questions regarding life satisfaction, four concerning job satisfaction, and three designed to measure self-esteem. They were allowed four responses ranging from very satisfied to very dissatisfied. It is presumed that there was no neutral choice offered. Reliability coefficients ranged from .79 to .72 for the three scales. Despite these statistics, without providing theoretical rationale, there was no good evidence that these instruments measured what they were designed to assess. Findings showed no evidence for a relationship between life satisfaction and sports involvement. They concluded that sports involvement was not likely to be employed as compensation for life dissatisfaction unless an individual already received considerable gratification from a particular sport.

In general, it seems that the foundational research on this subject is fraught with

various methodological problems. The trend that seems to be emerging in this review with regards to the benefits of sports participation is one of mixed findings. While some literature appears to indicate that sports are psychologically beneficial, some shows no correlation between the two; yet there is more research to be examined.

Studies Having Psychological Well-being as the Dependent Variable

While there are very few articles that concentrate specifically on how sports participation affects psychological well-being, there are many that attempt to find variables which predict well-being. Some of these studies analyze participation in sports as one of many variables. For instance, Rosenberg and Chelte (1980), in a study not specifically designed for sports participants, were interested in whether membership in voluntary associations leads to life satisfaction. Their way of measuring the dependent variable of life satisfaction was through avowed or self-reported happiness. Participants were asked to qualify their satisfaction and happiness, for example choosing between "very happy," "pretty happy," or "not too happy." This method corresponded to the Snyder and Spreitzer (1974) study, which was judged to be lacking in geographical representation. These authors hoped to overcome such problems by utilizing data from two National Opinion Research Center ([NORC], 1975, 1977) surveys. In sum, the data pool added to 3020 participants nationwide.

Whereas Snyder and Spreitzer (1974) examined three separate dimensions of sport involvement, Rosenberg and Chelte (1980) considered membership in a sport volunteer association to be a comparable independent variable. The assumption that membership in a volunteer sport association involved sports participation appears to be

logical. Yet the qualifications of a sport volunteer association needed to be delineated. This was one deficiency of the article. Even though the authors gave numerous examples of nonsport voluntary associations, they did not give any examples of sport voluntary groups.

The researchers hypothesized that due to increased social interaction and positive effects of sports involvement, those involved in sport voluntary associations would score the highest on avowed happiness measures, with nonsports members next, and nonmembers scoring lowest. Findings indicated significant differences in avowed happiness for members of sport volunteer organizations as compared to those not involved in a volunteer organization. This was best explained as a social interaction effect. When sport and nonsport volunteer members were separated, no significant differences were found in avowed happiness. This finding supplied further confirmation for the social interaction view. Therefore it appears that sports involvement did not have an impact on life satisfaction in this study, while social interaction was influential.

To their credit, the authors pointed out some limitations of their methodology and some reasons for their findings. The most obvious explanation for the different findings between this research and Snyder and Spreitzer (1974) was the change in the independent variable. Because they had limitations in their data, Rosenberg and Chelte (1980) were forced to equate membership in a sport voluntary organization with sports involvement. Snyder and Spreitzer, on the other hand, examined these two independent variables separately. Both studies called attention to the problem of causal attribution.

The temporal priority of sports involvement and life satisfaction has still not been adequately addressed by any of the studies reviewed. A recommendation was made for longitudinal research to overcome such difficulties.

One example of such a study was conducted by Kalimo and Vuori (1990). This was a highly complex study with many variables. It was a longitudinal design that began with adolescents and continued following them into adulthood. Researchers were mainly interested in which factors contributed to mental well-being as defined by competence and life satisfaction. Subjects came from a healthy child study conducted in Finland from 1955-1963. A representative sample of the country was obtained. Researchers sent out a questionnaire to all of the subjects who participated in the initial study. They received 817 completed questionnaires which computed out to a 77% response rate. Subjects were separated into four groups based on the variables of competence and life satisfaction. Statistical analysis was then performed comparing the groups on their responses to the preliminary study as well as variables from the more recent questionnaire.

In essence it appeared that the researchers' goal was to find variables that predicted where a person would be in terms of competence and life satisfaction. They looked at historic information such as parent's education level, level of home care, intelligence, hobbies, and self-esteem as a child. They also examined current variables such as work characteristics, work attitudes, education, financial situation, social support, and coping strategies. There was a great deal of information in this study that was superfluous to the current literature review. The one relevant finding was that

having sports as a hobby during childhood predicted adult competence. However, a statistically significant relationship was not found between childhood sports involvement and life satisfaction as an adult. So although the design of this study held some promise, the results failed to show a relationship between sports participation and one measure of well-being.

Vilhjalmsson and Thorlindsson (1992) gathered data from a national survey of adolescents in Iceland (Aar, Wold, & Kannas, 1986). They investigated the relationship between several variables including sports participation, level of exercise, dimensions of psychological well-being, unhealthy behavior, and demographic categories. Because all of the data had already been collected, researchers simply had to look for relationships among the variables. They were already assured that the sample was random and representative of ninth grade students in Iceland. A thorough and germane review of the literature was presented. The case was made for sports participation impacting health through social contact. The authors predicted that participants in formal sport clubs would score high on measures of psychological well-being while those involved in informal sports would score fair and those in individual sports would score low.

Mental health was measured via four dependent variables. Life satisfaction was measured through one self-report question. Psychophysiological symptoms, anxiety, and depression were assessed by asking various five-choice Likert scale type questions. There were four questions for both psychophysiological symptoms and depression, and three questions for anxiety. Cronbach's alpha, a measure of internal consistency, was

.64, .60, and .59 for the three variables. This showed that the questions for each dependent variable were related but not to a convincing degree.

Additionally, subjects were queried as to their level of alcohol and cigarette use. Using six dependent variables to measure mental health was a novel approach. Even though some variables involved behavioral measures of health, it seemed that they all had something to do with psychological well-being. Perhaps this approach resulted in a more complete view of mental health than simply asking about life satisfaction or subjective well-being.

Bivariate correlations yielded some interesting results. All dependent variables were significantly related as expected. For instance, those who were satisfied with life tended not to have significant complaints of anxiety, depression, and psychophysiological symptoms. Similarly, they did not typically smoke cigarettes or drink alcohol. Female adolescents showed higher levels of anxiety, depression, and psychophysiological symptoms and were less involved in sports than males. Strenuousness of exercise was found to be significantly related to all dependent variables. While formal and informal sports participation were positively related to life satisfaction and negatively related to other dependent variables, individual sport involvement was only related to depression and smoking. Somewhat surprisingly, that relationship between individual sports and depression was positive. This was explained by the loneliness and lack of social contact that occurs in individual sport practice and competition.

Multiple regressions were also performed on the data. Results were similar to

those found with bivariate correlations except that less significance was found. Participation in club or formal sports was negatively related to depression, psychophysiological symptoms, and use of alcohol. Informal participation in a sport was the only method of involvement that was significantly related to life satisfaction. This may be because these individuals were participating purely for their own benefits without the added pressure of needing to win for the team. Individual sports participation was again positively related to depression.

The authors emphasized that strenuous exercise has been shown to have the greatest positive impact on mental health. They also concluded that involvement in group sports promoted social contact, having a positive effect on well-being. This study was one of the most emphatic in terms of suggesting that sports and exercise do positively affect psychological health. The authors explained that the relationship was due to social interaction. While social connections are expected to be a positive factor in one's well-being, there may be other factors that make sports beneficial. The overall results of studies designed to measure psychological well-being continue to supply mixed evidence as to the effects of sports participation.

Studies Predominantly Concerned with Sports Participation

Just as a significant amount of research has been done on psychological well-being, some investigation of motivation to participate in sports has occurred in recent years. Grove and Dodder (1982) examined the previous research on the functions of sports. While numerous studies have attempted to suggest reasons for interest in sports, empirical studies investigating perceptions have been infrequent. Therefore, the authors

hoped to fill the void by doing their own factor analysis of different motivations.

They began with a systematic and extensive review of the literature on functions of sport. Over one hundred separate functions were identified and classified into nine general categories. A 26-item questionnaire designed to include each of the nine functions was constructed. Participants could select from seven choices on a Likert scale based on agreement or disagreement. A random and diverse sample of 510 college students and 127 faculty members was obtained and the questionnaire was administered.

Factor analysis was then applied to the data. The results did not indicate that sport functions can be separated cleanly into nine categories as the authors had hoped. Three of the 26 questions were unrelated to people's perceptions of the purpose of sports. The authors decided to eliminate these three questions as well as two others that did not effectively differentiate between factors. A second factor analysis of the modified 21-item questionnaire yielded five factors that accounted for 60% of the variance. All of the questions in the modified questionnaire were found to load on the construct "perceptions of sport functions" (Grove & Dodder, 1982, p. 100).

Both factor analyses separated out factors that appeared to involve psychological well-being. These factors were labelled "Emotional Health" and "Psychophysical Well-being" (Grove & Dodder, 1982, p. 101). Two of the five questions related to "Psychophysical Well-being" involved emotional reasons for sports participation, two involved physical reasons, and one concerned the entertainment value of sports. It was not clear why this group of questions separated out into an

independent factor. One might hypothesize that Psychophysical Well-being became a "catchall" category. It can be established that psychological health was believed to be an important reason for sports involvement by these authors. While their efforts at an empirical factor analysis may not have resulted in convincing conclusions, these authors should be credited for a novel approach.

In a similar effort to separate out motives for sports participation, Raugh and Wall (1987) revised a questionnaire so that it could be used to measure athletes' and nonathletes' attitudes toward sport participation. It was then given to university athletes, members of physical education activity classes, and participants in intramural programs. Their goal was to refine the questionnaire and show that it could be used more broadly to investigate participation motivation. While they seemed to have good intentions and a good idea of administration across different levels of sport involvement, lack of clarity permeated this article.

The researchers failed in several areas. They did not describe the revisionary process for the questionnaire selected. Explanations were not provided for either the choice of categories or the rationale for eliminating categories from the instrument. Researchers did not elaborate on their method of "field testing" the questionnaire. Tables of vital statistics were not included. Finally, the factors that emerged from analysis of the data were not labeled or else the labels were not given in the article. For these reasons the results and conclusions of this article will not be examined further.

Klint and Weiss (1987) asked some intriguing questions in their study on participation motivation in children. Specifically, they wanted to ascertain whether

physical and social competence were related to initial and continuing sports involvement. In doing so, they wished to overcome some gaps in the research between understanding reasons for participation and existing theory. They identified some problems in previous research that have not yet been mentioned. One such problem has been inadequate definition of participation. For instance, participation could conceivably be defined as playing one specific sport or playing one of many different sports. Level of involvement is another connected but separate variable which had not been operationally defined. Often the infrequent participant was placed in the same category as the regular player, or even the sports fanatic.

These authors chose to define participation as involvement in gymnastics. Sixty-seven children 8 to 16 years-old involved in gymnastics programs were asked to rate 32 items on motivation. While several items appeared to relate to psychological well-being, the only overtly related question focused on release of frustration. From this questionnaire, items were grouped into seven subscales of motivation for participation. The only factor converging on psychological well-being was labeled Energy Release and contained two questions. Since the reliability coefficient for this factor (.53) was below the accepted level (.60), it was not considered further. This study seemed to exclude important psychological variables from the initial questionnaire at the outset, and therefore they did not find any evidence for psychological well-being as a motivation. It can also be speculated that such motivations may not be important for younger children since they have not yet acquired the thought capacity that is necessary to comprehend abstract concepts such as mental

health.

Instead of focusing on motivation for participation, some researchers elected to concentrate on reasons for attrition. Kirshnit, Ham, and Richards (1989) were primarily concerned with finding some explanation for the decline in sports participation as children moved into adolescence. They investigated attrition by asking fifth through ninth grade pupils to fill out a self-report form at random times of the day. The 401 participants were randomly selected students in the suburban Chicago area. Each carried a pager for one week, filling out a questionnaire each time they were prompted by a beeper signal.

Questions were asked regarding the activity in which they were engaged, the type of sports participation, and five dimensions designed to assess subjective state. Those dimensions were affect, arousal, motivation, freedom of choice, and skill. Measurement was done through various semantic differential scales. For instance, one question designed to measure affect required the subject to choose on a scale of one to seven how happy or unhappy they felt. Each individual's responses on the five scales were converted to z-scores to control for individual differences. Sport involvement was classified as either gym class, organized, or informal.

Rationale for the study was the lack of previous research on the subjective sports experiences of youth. Although some investigation of sports attrition has been conducted, it was typically asking adults to reflect back on reasons why they curtailed their involvement. These researchers wanted to capture the process as it was happening. They were furthermore interested in the different experiences across sport

contexts. Since gym class often included forced participation, and organized sports involved pressure, the authors believed that informal sports would produce the most positive experiences for the subjects.

Some methodological problems were found. A low response rate was established particularly during organized sport participation. This was believed to be related to the impractical nature of filling out a form during a structured contest. One important finding for the purposes of this literature review was that sports was one of the most positive activities for these subjects. Positive affect, motivation, and greater arousal were found when an individual was engaged in a sporting activity. These differences were found to be significant. Curiously, even though sports provided a positive experience, they occupied a very small proportion of time in subject's lives.

It seemed clear to these researchers that athletics was experienced as positive for those participating. Affect and arousal levels were higher during athletic involvement and participants reported more motivation than for other activities. They wondered why sports had gotten the reputation for being a negative influence on children. The authors concluded by calling for longitudinal research following children through adolescence to establish evidence for a causal relationship between affect, motivation, and sports participation.

Battista (1990) believed there was a void in empirical information on why adults participated in sports. Therefore, he decided to explore the importance subjects assigned to various motivations by creating a "personal meaning scale." The 24-item questionnaire was created by reviewing literature on sports participation, similar to

Grove and Dodder (1982), and by consulting with physical education experts. Next, the questionnaires were completed by 50 female and 48 male racquetball players. In the final rankings, the strongest motivations for playing racquetball included enjoyment, competition, challenge, health and fitness, and self-satisfaction. Strangely, emotional or psychological well-being was not even included as a possible motivation. Perhaps the authors placed it under the category of health and fitness, but it seemed to deserve a separate category. The authors did make an interesting comment on women's lack of competitiveness and then stated "unlike men, women are attracted to sports for the positive effects on one's innerself" (Battista, 1990, p. 1008). Certainly men also have some interest in those positive effects beyond being competitive.

Implications for Further Research

Considering the methodological problems, the deficiency of causal studies, and the inconsistent findings, it appears that further work is necessary. Research investigating the effects of both exercise and sports participation on psychological well-being has not led to any direct answers, though it points to correlations between the variables investigated. An abundance of survey data has been gathered on exercise and psychological well-being. A substantial amount has also been undertaken on the subject of sports participation. While some of the questionnaire findings do not support a relationship between physical activity and well-being, several of the studies strengthen the argument. Evidence may be pointing to a correlation between sports participation and psychological adjustment, but more research needs to be done in order to justify that conclusion.

Some change in the way research on this issue is conducted may prove helpful. Within the research examined, and as discussed earlier in the methodological section, there were several problems that came up repeatedly. One necessity for further research in this area is for agreement on the meaning of psychological well-being. Researchers continually defined this term in various ways. Therefore they were seldom in agreement on how the construct should be measured. The result was evident in this review as many questionnaires, surveys, and psychological instruments were explained. Doan and Scherman (1987) called for consistent use of psychological assessment tools in their literature review. If a consensus on which instrument to use could be reached, there would undoubtedly be greater simplicity in the research and more consistency in the results.

Perhaps the most glaring research need is for designs other than surveys. The questionnaire is the most economical and practical way to investigate subjects' experience of sport and exercise, but it has already been done. Two research teams highlighted the limitations of self-reported data in this realm (Doan & Scherman, 1987; Vilhjalmsson & Thorlindsson, 1992). Other methods would help researchers to overcome these limitations. There is a need for either longitudinal data following subjects over time, or true experiments with random assignment to conditions.

Several researchers called for longitudinal designs (Kirshnit et al., 1989; Rosenberg & Chelte, 1980) in order to address the problem of temporal sequencing. The primary reason for conducting longitudinal studies would be to examine changes in psychological well-being both before and after sports involvement. Longitudinal

designs would help to determine if sports participation promoted well-being, or if those who were already well adjusted naturally sought out sports. One limitation of survey data is that there is no baseline information to aid in comparisons of personal changes. With longitudinal data, individual changes can be monitored over time, but isolating variables is often troublesome. There would definitely be problems involved with longitudinal studies, namely manipulation of variables, but overall, they would provide valuable information on this topic.

Still other researchers recommended experimental designs (Doan & Scherman, 1987; Vilhjalmsson & Thorlindsson, 1992). The benefit of this type of research is clear. Repeatedly, findings in this review have been qualified as correlational. By employing a true experimental design with random selection, random assignment, and use of a control group, researchers could then present significant findings as causal rather than correlational. While there are certainly practical problems to overcome, it would be of enormous benefit if more research of this nature were attempted (Brown, 1986).

One other area of interest for future research may be in the area of replication. Specifically, several of the studies reviewed were conducted in countries other than the United States. Vilhjalmsson and Thorlindsson (1992) identified a need for investigation into the cross-cultural differences of the value and impact of sports. Replication of studies done in foreign countries is one way this could be achieved. Cultural differences may not be significant on the variables of exercise and sports participation, but until research shows otherwise, they cannot be overlooked.

Assuming that there is a relationship between sports involvement and mental

health, future research should work toward isolating particular aspects of sports involvement that are health promoting and exploring ways to make sports a positive experience. The competition factor that is present in sports, but usually absent from exercise, could be one focus of further research. Studies might investigate the level of competition that promotes health and attempt to find out if too much competition is detrimental.

Additional research might focus on individual versus team involvement, thus exploring the social component identified in some of the studies reviewed. Comparison of psychological well-being in various sports would be another intriguing area. Thinking along the lines of psychological treatment, sports participation could be examined as a potential intervention for various presenting problems such as depression and anxiety. In short, the research possibilities are quite extensive, but a causal relationship first needs to be established between sports participation and psychological adjustment.

Summary and Conclusions

It is apparent that while some of the research supports a relationship between psychological well-being and sports participation, some of it is inconclusive. Many methodological issues are also present in the literature on both sports participation and exercise. The mixed findings can partially be attributed to poorly established methodology. For instance, the general failure of researchers to adequately define psychological well-being has been a major roadblock. Similarly, excessive reliance on

survey and questionnaire studies has yielded results that are predictable and limited. Overcoming these issues will need to be a central focus of future research for those who desire constructive information.

In the final analysis, four of the seven exercise studies that were examined point to a relationship between exercise and well-being. Five of the eleven sports participation studies that were reviewed show evidence for a connection. Possible explanations for the mixed findings include poorly defined terms, use of improper measurement tools, and inadequately designed studies. Despite the less than overwhelming results, it can be safely stated that physical activity correlates in some way with psychological adjustment. Unfortunately, the extent of that relationship is not known. Until further research is done using longitudinal and experimental designs, some of the questions raised in this review will remain unanswered.

Presently, the question of temporal sequence deserves to be addressed more thoroughly. Experimental studies where random assignment is employed could assist this cause. Such experiments could help to determine if healthy people seek out sports or if sports contribute to psychological health. The order of the two variables has not been properly investigated in previous research. Finding an answer to that question would be difficult, but it would represent a giant step towards promoting psychological well-being in our society.

A final issue that remains a mystery is the difference between sports participation and exercise. The competition element was raised in this review, but not addressed completely. It would be beneficial if more studies could be done that isolate

competition effects and show if they are helpful or harmful. This is one of many possible variables that attracts individuals to sports. By determining which variables contribute to psychological well-being, we could develop ways to encourage people to be more healthy. Until that research is completed chances are good that individuals will continue to exercise and play sports. Voluntary participation may not necessarily provide scientific evidence, but it certainly provides a testimonial for the universal nature of our desire for physical activity.

REFERENCES

- Aar, L. E., Wold, B., & Kannas, L. (1986). Health behavior in schoolchildren: A World Hunger Organization cross national survey. Health Promotion, 1, 17-33.
- Bachman, J., Kahn, R., & Davidson, T. (1967). Youth in transition (Vol. 1). Ann Arbor, MI: Institute for Social Research.
- Battista, R. R. (1990). Personal meaning: Attraction to sports participation. Perceptual and Motor Skills, 70(3), 1003-1009.
- Bozoian, S., Rejeski, W. J., & McAuley, E. (1994). Self-efficacy influences feeling states associated with acute exercise. Journal of Sport and Exercise Psychology, 16, 326-333.
- Bradburn, N. (1969). The structure of psychological well-being. Chicago: Aldine.
- Brown, D. R. (1986). Exercise and sport as elements in therapy. The Clinical Psychologist, 39(3), 71-74.
- Coleman, M., Washington, M. A., & Price, S. (1985). Physical exercise, social background, and the well-being of older adult women. Perceptual and Motor Skills, 60(3), 737-738.
- Coopersmith, S. (1967). The antecedents of self-esteem. San Francisco: Freeman.
- Dahlstrom, W. G., & Welsh, G. S. (1976). An MMPI handbook: A guide to use in clinical practice and research. New York: McGraw-Hill.
- Diener, E. (1984). Subjective well-being. Psychological Bulletin, 95(3), 542-575.
- Diener, E., Emmons, R., Larsen, R., & Griffin, S. (1985). The satisfaction with life scale. Journal of Personality Assessment, 49(1), 71-75.
- Doan, R. E., & Scherman, A. (1987). The therapeutic effect of physical fitness on measures of personality: A literature review. Journal of Counseling and Development, 66(1), 28-36.
- Gauvin, L. (1989). The relationship between regular physical activity and subjective well-being. Journal of Sport Behavior, 12(2), 107-114.
- Goldwater, B. C., & Collis, M. L. (1985). Psychologic effects of cardiovascular conditioning: A controlled experiment. Psychosomatic Medicine, 47(2), 174-181.

- Graham, J. R. (1978). A review of some important MMPI special scales. In P. McReynolds (Ed.), Advances in psychological assessment (Vol. IV, pp. 311-331). San Francisco: Jossey-Bass.
- Grove, S. J., & Dodder, R. A. (1982). Constructing measures to assess perceptions of sport functions: An exploratory investigation. International Journal of Sport Psychology, 13(2), 96-106.
- Hathaway, S. R., & McKinley, J. C. (1983). The Minnesota Multiphasic Personality Inventory manual. New York: Psychological Corporation.
- Kalimo, R., & Vuori, J. (1990). Work and sense of coherence: Resources for competence and life satisfaction. Behavioral Medicine, 16(2), 76-89.
- Kamman, R., & Flett, F. (1983). Measure of current level of general happiness. Australian Journal of Psychology, 35(2), 259-265.
- Kirshnit, C. E., Ham, M., & Richards, M. H. (1989). The sporting life: Athletic activities during early adolescence. Journal of Youth and Adolescence, 18(6), 601-615.
- Klint, K. A., & Weiss, M. R. (1987). Perceived competence and motives for participating in youth sports: A test of Harter's Competence Motivation Theory. Journal of Sport Psychology, 9, 55-65.
- Kurtz, J. J., & Kyle, D. G. (1977). Life satisfaction and the exercise of responsibility. Social Work, 22(4), 323-325.
- Larsen, R. J. (1985). Theory of measurement of affect intensity as an individual difference characteristic. Dissertation Abstracts International, 45, 2297.
- Mechanic, D., & Hansell, S. (1987). Adolescent competence, psychological well-being, and self-assessed physical health. Journal of Health and Social Behavior, 28(4), 364-374.
- Morgan, W. P. (1985). Affective beneficence of vigorous physical activity. Medicine and Science in Sports and Exercise, 17(1), 94-100.
- National Opinion Research Center. (1975). Codebook for the spring, 1975. Chicago: Author.
- National Opinion Research Center. (1977). Codebook for the spring, 1977. Chicago: Author.

- Novak, M. (1982). The joy of sports. New York: University Press.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. Applied Psychological Measurement, 1, 385-401.
- Raugh, D., & Wall, R. (1987). Measuring sports participation motivation. International Journal of Sport Psychology, 18(2), 112-119.
- Robinson, J. P., & Shaver, P. (1969). Measures of psychological attitudes. Ann Arbor, MI: Survey Research Center.
- Rosenberg, E., & Chelte, A. F. (1980). Avowed happiness of members of sport and non-sport voluntary associations. International Journal of Sport Psychology, 11(4), 263-275.
- Rosenberg, M. (1979). Conceiving the self. New York: Basic Books.
- Rotter, J. B. (1966). Generalized expectancies for internal verses external control of reinforcement. Psychological Monographs: General and Applied, 80(1), 1-28.
- Snyder, E. E., & Kivlin, J. E. (1975). Women athletes and aspects of psychological well-being and body image. Research Quarterly, 46(2), 191-199.
- Snyder, E. E., & Spreitzer, E. A. (1974). Involvement in sports and psychological well-being. International Journal of Sport Psychology, 5(1), 28-39.
- Spinrad, W. (1981). The function of spectator sports. In G. Luschen & G. Sage (Eds.), Handbook of social science of sport (pp. 360-379). Champaign, IL: Stipes.
- Spreitzer, E., & Snyder, E. E. (1989). Sports involvement and quality of life dimensions. Journal of Sport Behavior, 12(1), 3-11.
- Stearns, G. M., & Moore, R. J. (1993). The physical and psychological correlates of job burnout in the Royal Canadian Mounted Police. Canadian Journal of Criminology, 35(2), 127-147.
- Taylor, J. A. (1953). A personality scale of manifest anxiety. Journal of Abnormal Social Psychology, 48, 285-290.
- Valliant, P. M., Bezzubik, I., Daley, L., & Asu, M. E. (1985). Psychological impact of sport on disabled athletes. Psychological Reports, 56(3), 923-929.

Vilhjalmsson, R., & Thorlindsson, T. (1992). The integrative and physiological effects of sport participation: A study of adolescents. The Sociological Quarterly, 33(4), 637-647.

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